



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,699	08/24/2001	Toshiya Uemura	P 282892 T36-135964M/KOH	9658
21254	7590	03/10/2005	EXAMINER KORNAKOV, MICHAIL	
MCGINN & GIBB, PLLC 8321 OLD COURTHOUSE ROAD SUITE 200 VIENNA, VA 22182-3817			ART UNIT 1746	PAPER NUMBER

DATE MAILED: 03/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/935,699

Applicant(s)

UEMURA ET AL.

Examiner

Michael Komakov

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-24, 31 and 32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-24, 31 and 32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/08/2005 has been entered.
2. Claims 21-24 and 31,32 are examined on the merits.

Specification

3. Applicants are reminded that a patent Abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. While the instant claims recite a method of manufacturing a specific **group III nitride compound semiconductor device by irradiating a surface of a wafer comprising a group III nitride compound**, the instant abstract. Therefore, Applicants are encouraged to correct the Abstract in order to better reflect the instant invention.

Drawings

4. The drawings, Fig. 1 and 5 are objected to as failing to comply with 37 CFR 1.84(p)(5) because Fig. 1 does not include the reference sign 10, as per page 14, line 14 and Fig.5 includes the reference character(s) 16, not mentioned in the

description. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claim 31 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 31 recites the limitation "said light-emitting device". There is insufficient antecedent basis for this limitation in the claim.

7. Claims 21, 23, 31, 32 are rejected under 35 U.S.C. 102(b) as being anticipated by JP60-175420.

JP'420 teaches a method of forming a pattern on the substrate, which comprises BN film (reads on "a group III nitride compound", as instantly recited). The method of JP'420 includes a step of removing a resist defect (reads on "resist residue", as instantly recited), which remains on semiconductor surface after patterning the resist layer. The

Art Unit: 1746

defect removing step is performed by irradiating the substrate surface with ultraviolet rays, having wavelength 300 nm **or less**, emitted from excimer laser under ambient conditions (Abstract, page 86, left bottom column). Regarding the recitation of claim 1, which states that "said ultraviolet rays cause a reaction of oxygen molecules to form stimulated oxygen atoms having a strong oxidative power at said surface of said wafer", it is noted here that since the UV irradiating of JP'420 is performed under ambient conditions, thus including the presence of air, which comprises oxygen, the indicated statement is inherently present in the teaching of JP'420. It is axiomatic that one who performs the steps of the known process must necessarily produce all of its advantages. Mere recitation of a newly discovered function or property, that is inherently possessed by things in the prior art **does not cause a claim** drawn to these things to distinguish over the prior art, consult *In Re* Leinoff v. Louis Milona & Sons, Inc. 220 USPQ 845 (CAFC 1984). The same rationale is applied to the recitation of claim 31.

8. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP JP60-175420 in view of US 6,628,078 to Sadatoshi.

While teaching the use of UV radiation with the wavelength of 300 nm **or less**, JP'420 does not specifically indicate the use of 172 nm wavelength. However, the use of 172 nm wavelength for substrate cleaning purposes is known in the art. Thus, US'078 teaches that 172 nm short wavelength has high power, being excellent in ability to decompose an organic substance, and thus can be advantageously used for dry cleaning of substrates (col.1, lines 30-35). Therefore, one skilled in the art motivated by US'078 would have found obvious to utilize 172 nm wavelength in order to enhance

Art Unit: 1746

removal of photoresist defect in the teaching of JP'420 with the reasonable expectation of success.

9. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP JP60-175420 in view of Yamazaki et al (U.S. 4,987,008).

JP'420 remains silent about irradiating p-type semiconductor layer. However, UV irradiating of p-type semiconductor layers is known in the art. Thus, Yamazaki teaches treatment of p-type semiconductor surface with UV radiation for cleaning purposes (col.8, line 57). Therefore, one skilled in the art would have found obvious to remove resist defects from p-type semiconductor surfaces, utilizing the method of JP'420 with the reasonable expectation of success.

Response to Arguments

10. Applicant's arguments with respect to claims 21-24,31,32 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1746

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Kornakov
Primary Examiner
Art Unit 1746

03/03/2005